GROUND-WATER WITHDRAWAL WELLS AND MONITORING WELLS
Groundwater wells are subject to water from the shallow freshwater lens without mixing safety.
Monitoring wells could sample water, which is analyzed for various parameters, including salinity and dissolved solids.

Isthmus and on Namur, which is heavily vegetated.

Area extent of the freshwater lens can be shown by a map of salinity (fig. 7) based on local salinity variations.

Figure 7. Chloride concentrations in shallow wells, October 1990 and January 1991. The extent of potable freshwater in January 1991 is approximated by the line of 248 milligrams per liter chloride concentration, and is based on non-pumping conditions.

Figure 8. Thickness of the freshwater lens for non-pumping conditions, Roi-Namur Island, January 1991.

THICKNESS OF THE FRESHWATER LENS—MAP VIEW
The freshwater lens extends throughout the central area of Roi but is thickest in the central isthmus and on Namur, which is heavily vegetated.

Figure 6. Ground-water withdrawal wells, monitoring wells, and lines of section, Roi-Namur Island.

Figure 9. Thickness of the freshwater lens to depth of 1.25-foot and transition zone between 1.25- and 10-foot lines, Roi-Namur Island, January 1991. Lines of sections are shown in figure 6.

Areal extent of the freshwater lens

The freshwater lens extends throughout the central area of Roi but is thickest in the central isthmus and on Namur, which is heavily vegetated.

Definition of potable freshwater—Salinity in a freshwater lens is generally lower than 1,000 mg/L, whereas salinity in the underlying saltwater lens exceeds 35,000 mg/L. A freshwater lens is considered potable if it contains less than 500 mg/L of total dissolved solids (TDS) and is free of pathogenic bacteria. The water quality of a freshwater lens is determined by local factors, such as recharge rate, geology, and land use.

Preparation of the freshwater lens—Wells were drilled into the freshwater lens to provide a water source for the military community. Water samples were collected from these wells and analyzed for various parameters, including salinity and dissolved solids.

Preparation of the freshwater lens—In January 1991, the freshwater lens was approximately 20 feet thick and extended over a large area on Roi-Namur Island. Water samples were collected from these wells and analyzed for various parameters, including salinity and dissolved solids.

Figure 10. Chloride concentrations in shallow wells, October 1990 and January 1991. The extent of potable freshwater in January 1991 is approximated by the line of 248 milligrams per liter chloride concentration, and is based on non-pumping conditions.

Figure 11. Thickness of the freshwater lens for non-pumping conditions, Roi-Namur Island, January 1991.

Figure 12. Thickness of the freshwater lens to depth of 1.25-foot and transition zone between 1.25- and 10-foot lines, Roi-Namur Island, January 1991. Lines of sections are shown in figure 6.

GROUNDDWATER RESOURCES AND CONTAMINATION AT ROI-NAMUR ISLAND, KWAJALEIN ATOLL, REPUBLIC OF THE MARSHALL ISLANDS, 1990-91

by

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Water resources and contaminant trends at Roi-Namur Island were monitored to assess the impact of military operations on groundwater quality. The data collected included water levels, salinity, and dissolved solids, which were compared to environmental standards to determine if the water was safe for drinking. The results showed that the water quality in the central isthmus and on Namur was generally good, with low salinity and dissolved solids concentrations. However, in some areas, the water contained higher levels of dissolved solids, which may have been a result of local land use practices or natural factors. Overall, the data suggest that the groundwater resources at Roi-Namur Island are generally safe for drinking, but monitoring continues to ensure that the water remains uncontaminated.